

num. It would appear that vesicular vapour, by the action of the wind, had cemented the grains of sand so as to form globules, analogously to what we see on a larger scale in the formation of hail. We are entitled to assert this, seeing the speedy disaggregation of these globules into grains of sand, when brought into contact with a little drop of water in the field of a microscope. The fall on the 22nd was so abundant in Rome that from the amount, 0.25 gramme, gathered on an earthenware disc of 30 centimetres in radius, we argue a fall of not less than eight quintals per square kilometre." The correspondent himself writes: "I am by no means satisfied that the rain was of sand and water. The drops on my drawing paper were easily absorbed by a pocket-handkerchief, and left no stain on the paper; but my drawing still bears many stains from drops which apparently I had not touched. Since then I have washed the sky over with them, and have afterwards sluiced the surface of the paper with water from a sponge; yet there they remain. If sand they be, that material appears to have a most unusually tenacious affinity for the paper. If the drops were of sand and pure water I should expect to find that as soon as the water had evaporated, the sand would no longer adhere to the paper and that the spots would no longer be on my drawing."

THE *Melbourne Argus* informs us that on May 11 the tide rose from five to eight feet on the eastern coast of New Zealand, and that at Sydney and Newcastle, on the New South Wales coast, the tide also rose above its usual height, though in a less marked degree. It will be noted that the great earthquake-wave which did so much damage to the coast towns of Peru occurred on May 10, the time of propagation of the wave from Peru to New Zealand being, however, not yet precisely stated.

SIGNOR GESSI, the celebrated African explorer, while proceeding to the Lake District, had all his scientific instruments and baggage burnt.

MESSRS. MACMILLAN AND CO. have in the press, and will shortly publish, a translation of Fleischer's Volumetric Analysis. In this work the author's aim is to systematise the volumetric processes. A general scheme of analysis without previous separation of bases is also a feature of the work. The translation is made by Mr. Pattison Muir of the Owens College. The translator has added a few notes and supplementary methods.

THE latest news from Yeniseisk announces the passage through this place of MM. Wiggins and Schwanenberg, on their way towards the north. Capt. Wiggins goes towards his steamer, which has wintered at Zureika, and after having taken on board the tallow he proposes to export, he will return, *via* the Kara Sea to England. M. Schwanenberg proposes to undertake an exploration of the graphite mines of the Yeniseisk district, and to take a cargo of graphite to Europe. There is, however, little hope that this latter project will be realised.

WE are glad to learn from the Annual Report of the New Russian (Bessarabian) Society of Naturalists that this young scientific body has displayed during the past year great activity. The following are the more important papers published by the society:—On the family of ephemerides from the standpoint of the Darwinian theory, and on the metamorphoses of axolotls, by Prof. Mechmikoff; the theory of chlorophyll, by Prof. Wolkoff; the algalic fauna of the Black Sea, by M. Rishavy; on the laws of distribution of electricity on surfaces, by Prof. Umoff. The society has, moreover, carried on a considerable number of scientific explorations in various parts of Russia, and has continued the publication of a cryptogamic herbarium of Russia.

THE application of new materials for paper stock which has occupied so much attention of late seems to have attracted some notice in the Philadelphia Exhibition last year. From Jamaica

bamboo was perhaps the most important paper-making plant exhibited. Of the young bamboo stems, which are the best for the purpose, a very large supply, it is said, could be annually, by systematic cuttings or croppings, furnished from plants flourishing in the humid parts of the island. It seems that the American paper manufacturers have also wished to make experiments with bamboo with the view, if possible, of introducing it into the American trade; so that, owing to the proximity of Jamaica to the United States, it is supposed that the supply of bamboo may eventually form an article of trade between the two countries.

THE additions to the Zoological Society's Gardens during the past week include two Pig-tailed Monkeys (*Macacus nemestrinus*) from Java, a Black Leopard (*Felis pardus*) from India, two Argus Pheasants (*Argus giganteus*), a Vieillot's Pheasant (*Euplocamus vieillotti*) from Malacca, presented by Sir Harry St. George Ord, C.B.; a North American Reindeer (*Rangifer tarandus*) from Newfoundland, presented by Capt. Edmund Fraser, 60th Royal Rifles; a Javan Chevrotain (*Tragulus javanicus*) from Java, presented by Mr. William Trent; an African Cobra (*Naja haje*) from the Cape of Good Hope, presented by Mr. Eustace Pillans; a Hawk-headed Parrot (*Derophtus accipitrinus*) from Brazil, purchased; ten Amherst Pheasants (*Thaumalea amherstiae*), two Temminck's Tragopans (*Cerionis temminckii*), twenty Common Boas (*Boa constrictor*), born in the Gardens.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—The following gentlemen were, on Saturday, June 30, elected, after open competition, to demysships in Natural Science at Magdalen College:—Mr. J. F. Heyes, of Liverpool College; Mr. R. V. Jackson, of Clifton College; Mr. G. A. Buckmaster, of Christ's Hospital and St. George's Hospital, London; Proxime accessit, Mr. A. M. Jackson, Magdalen College School, unattached student. These demysships are of the value of 95*l.* per annum, and tenable for five years from the date of election.

BRISTOL.—The first session of University College terminated on the 30th ult. without any special ceremony of prize-day or commemoration. The result of the work of this the first year must be considered very satisfactory, for in spite of several serious disadvantages, the lateness of the arrangements and appointments of last autumn, and the inconvenience of the crowded temporary premises, upwards of four hundred students have been enrolled. This number exceeds that of the first year of either the Newcastle or Leeds Colleges of Science, or of the Owens College. Lectures have also been delivered at Stroud in connection with the clothworkers' industry in the departments of textile fabrics and chemistry. Prof. Rowley has also delivered a course of lectures in literature at Bridgewater. Most of the courses of instruction only extended until Easter, when several of the temporary appointments expired. In consequence of this arrangement the numbers attending the classes in the third term has not been so great as in the preceding. The chemical laboratory has been in full swing, and evening practical classes have been added since Easter. The only reappointments hitherto concluded are the professorships of chemistry and modern literature, the lectureship in experimental physics, and the assistant lectureship in chemistry. The other reappointments are held over until the election of a principal, which will take place during the present month. It is understood that there are sixty candidates for this important post. No provision has yet been made for a lectureship in engineering.

ST. ANDREWS.—We understand that Prof. Fischer, the present occupant of the chair of mathematics in the University of St. Andrews, has made application to the University Court of St. Andrews for leave to resign his chair on a retiring allowance. As the necessary arrangements will most probably be completed during the present summer vacation, a new appointment will fall to be made before the opening of the session in the United College in November next. The patronage of the chair belongs to the Crown.

TAUNTON COLLEGE SCHOOL.—In reference to our article on Taunton College School, Mr. C. P. Bahin, of Heaton Moor, Stockport, writes that science was taught at that school before Mr. Tuckwell's time. Mr. Bahin forwards us a prospectus of the school for the year 1860, and what position was allotted to science at that time in the school may be inferred from the fact that "Physical Science" comes in as the last subject in the General Department after Fortification, that no mention is made of it in the Classical Department, and that "Monthly Lectures on General and Scientific Subjects are given during the winter season; and in summer, occasional excursions, with a view to the practically illustrating the various branches of Natural History, are taken in one of the weekly half-holidays." This is exactly the state of things we have all along protested against, and which Mr. Tuckwell has managed so successfully to remedy in the case of the Taunton School.

SCIENTIFIC SERIALS

Reale Istituto Lombardo di Scienze e Lettere. Rendiconti, vol. x., fasc. ix. and x.—On the equation of the eikosahedron in the resolution of equations of the fifth degree, by M. Klein.—Further notices and observations on the comets of 1877, by M. Schiaparelli.—On the morphological nature of distigma, by M. Maggi.—Case of fracture of the neck and diaphysis of the femur, by M. Scarenzio.—The combustibility of tobaccos, by M. Cantoni.—Stratigraphical observations on the Province of Pavia, by M. Taramelli.—Experimental researches on heterogenesis, by MM. Maggi and Cantoni.—On the relative length of the index and ring finger of the human hand, by M. Mantegazza.

Fasc. xi.—Contributions to the morphology of *Amphizonella*, by M. Maggi.—On the Arachnida of Greece, by M. Pavesi.—On the tension of induced electricity, by M. Macaluso.—The albuminous matter of urine, by M. Pellogio.—On the relative and specific weight of the cerebellum and the arch of the cranium, by MM. Colombo and Pizzi.

SOCIETIES AND ACADEMIES LONDON

Chemical Society, June 21.—Dr. Gladstone in the chair. The president announced the following grants from the Research Fund of the Society: Dr. Wright, 50*l.*; Mr. Neison, 25*l.*; Mr. C. Williams, 25*l.*; Mr. G. Harrow, 10*l.* The following papers were read: On diamyl, by H. Grimshaw. This substance was prepared by the action of sodium on amyl bromide. It boils at 160°. A chloride and acetate were obtained and investigated. By the action of caustic potash on the acetate, two alcohols were formed boiling at 202° and 212°. On oxidation acids were formed.—On the action at a high temperature of certain volatile metallic chlorides on certain hydrocarbons, by Watson Smith. *a.* The author investigates the action of antimony trichloride, and tin tetrachloride on naphthalin, benzene, and toluene, when these substances are severally passed in the state of vapour through red hot tubes. Benzene and tin tetrachloride gave a very large yield of diphenyl in one distillation. Toluene and antimony trichloride gave oils boiling at 270–320°. Naphthalin and antimony trichloride: 77 grm. of the former yielded 24.2 grm. of yellow crystalline isodinaphthyl; with tin tetrachloride, in addition to a large yield of isodinaphthyl, a reddish oil, and a citron yellow powder were obtained. *b.* Isodinaphthyl sulpho-acids and salts with certain other derivatives; the *a* and *β* sulpho-acids were prepared, also an oxydinaphthyl, a nitro-substitution product, and a cyarogen derivative. *c.* A new dinaphthyl. In the purification of crude isodinaphthyl by petroleum spirit, a fine red solution was obtained; from this the author succeeded in separating three substances melting at 75°, 147°, and 253°; the latter is probably Lossen and Otto's polymeric dinaphthyl, the second is an isomeric dinaphthyl already obtained by Lossen, the first is a new isomeric dinaphthyl.—On the action of alkaline oxalates on the earthy carbonates, and of solutions of alkaline carbonates on the earthy oxalates, by Watson Smith. The author having observed that when a solution of ammonium oxalate was brought into contact with chalk or powdered marble, an ammoniacal odour at once became apparent, has carefully measured the extent of this and similar reactions.—Note on thallous platinocyanide, by R. J. Friswell and A. J. Greenaway. In 1871 one of the authors stated that the above substance was colourless, but that a compound of it with thallous carbonate crystallised in dark red needles reflecting a green metallic lustre. Carstangen having confused the two substances and stated that thallous platinocyanide crystallised in blood red needles, the authors have re-investigated the question,

and fully confirmed the statements made in 1871.—On crystallised barium silicate, by E. W. Prevost. Pisani having stated that this substance crystallises in barium hydrate reagent bottles, the author has examined similar crystals, and finds that they consist of barium hydrate.—A note on anethol and its homologues, by W. H. Perkin. Methylparoxyphenylacrylic acid, when boiled in a bulb tube, furnishes a distillate, consisting of an oil with the formula $C_9H_{10}O$, which on oxidation yields apparently anisic acid. Methylparoxyphenylcrotonic acid yields anethol, methylparoxyphenylangelic acid yields a similar substance.—Note on persulphocyanic acid, by R. W. Atkinson, Japan. The author discusses the constitution of the above substance, and after investigating various silver and mercury compounds, concludes that the formula proposed by Glutz is probably correct.—On the oxidation products of the aloins, by A. Tilden, D.Sc. Barbaloin and socaloin when oxidised by potassium dichromate and sulphuric acid, yield a yellowish substance, which the author proposes to call aloxanthin, having the formula $C_{15}H_{10}O_6$. This substance, when treated with fuming nitric acid, yields a yellow nitro-acid, having the properties of aloetic acid.

Geological Society, June 6.—Prof. P. Martin Duncan, F.R.S., president, in the chair.—The Rev. Charles Leach, William May, John W. Myers, and John Fletcher Pagen, were elected fellows of the Society. The following communications were read: On the rank and affinities in the reptilian class of the *Mosasauroidea*, Gervais, by Prof. R. Owen, C.B., F.R.S. The author stated that while the Mosasaurians had been originally referred to the Cetacea by Camper, then to Crocodilia by Faujas de St. Fond, and to the Lacertilia by Cuvier, Prof. Cope had recently thought he recognised in them Ophidian affinities, spoken of them as "sea-serpents," and formed of them an order called Pythonomorpha. He then discussed in detail the various characters presented by the remains of these animals. The distinctive characters did not appear to the author to be sufficient for ordinal rank, and with P. Gervais he regarded the Mosasauridae as a family of Lacertilia equivalent to the Iguanodontidae and Megalosauridae in the order Dinosauria. The order Lacertilia among reptiles, being equivalent to the order Carnivora or Ferae among Mammals, the Mosasaurians would be the equivalents of the seals in the latter.—Note on the occurrence of the remains of *Hyenarctos* in the red crag of Suffolk, by Prof. William Henry Flower, F.R.S. The traces of *Hyenarctos*, described by the author in this paper, consist of a right and a left first upper molar, which were obtained from the Red Crag of Waldringfield, and are so much alike, that but for the former being rather more worn, they might have belonged to the same animal. On comparison these teeth were found to show no appreciable difference from the corresponding teeth of the original specimen of *Hyenarctos sivalensis* from the Sewalik Hills, and hence the author did not venture to regard them as representing a species distinct from the Indian one.—On the remains of *Hyposodon*, *Portheus*, and *Ichthyodactylus* from British cretaceous strata, with descriptions of new species, by E. Tully Newton, F.G.S., of H.M. Geological Survey.—On the precarboniferous rocks of Charnwood Forest, Part I., by the Rev. E. Hill, F.G.S., and the Rev. T. G. Bonney, F.G.S. The authors described a mass of slates, grits, and volcanic breccias, accompanied by some knolls and dykes of syenite, spread over a space of about fifty square miles. They showed that the patches marked on the Survey Map as greenstone of Bardon, Birchwood, and Buck Hill, except a very small portion of the latter, are really altered rock; that the syenite knoll of Bawdon Castle carries a mass of breccia in its centre; and that the area of syenite in Bradgate House Woods must be enlarged. Several writers have noticed that part of the porphyritic region of the north-west corner is altered rock. The authors showed that there is in it no igneous rock at all, and that the same is the case with every one of the smaller patches marked as porphyry on the Survey Map. All are volcanic breccias, ashes, or agglomerates, some of enormous size. The extent to which volcanic materials enter into the rocks of the district is remarkable. The authors endeavoured to correlate the stratified rocks, and adduced evidence to prove that the pebble and ash-beds of Forest Gate, the grit and pebble-beds of the Hanging Rocks, the similar beds in the grounds of Mr. A. Ellis, at Switland, and the quartzites of Bradgate Stable Quarry, Groby Pool, and Steward's Hay Spring, form one horizon; the slate breccias of Bloses Hill, Bradgate, Ulverscroft Mill, Markfield, Bardon, and High Towers, a second; the coarse ash-beds of Benscliff, Chitter-